



**UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office**

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/398,652	09/17/99	SAMARAS	W 042390.P5120

QM12/1102
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EXAMINER
CHANG, R

ART UNIT PAPER NUMBER
3729

DATE MAILED: 11/02/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No.	Applicant(s)	
	09/398,652	SAMARAS ET AL.	
	Examiner	Art Unit	
	Rick K. Chang	3729	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 August 2001.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 19 and 21-26 is/are pending in the application.
- 4a) Of the above claim(s) 22, 24 and 25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 19, 21, 23 and 26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Receipt is acknowledged of an amendment filed on August 31, 2001. This amendment has been entered.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 19, 21, 23 and 26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 19, line 8: the limitation "a group comprising" renders the claim vague and indefinite. Recommend amending "comprising" to --consisting of-- to place the limitation in proper Markush format.

Claim 19, line 14: amend "passes" to --pass--.

Claim 21, lines 1-2: the limitation "providing . . . material" renders the claim vague and indefinite. Recommend amending the limitation to --the interposer comprises organic material--.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4. Claims 19, 21, 23 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seidel (US 5,635,847) in view of Gedney et al (US 5,483,421), and further in view of Beers (US 5,680,936).

Re claim 19: Seidel discloses providing an interposer (10); coupling solder balls (12) to the interposer (10); coupling a plurality of semiconductor dice (11) to the first surface (the surface where 11s are mounted); and testing the plurality of semiconductor dice (11) on the interposer (col. 1, lines 20-34 and col. 2, lines 46-51).

Seidel fails to disclose populating the second surface with a plurality of conductive pads; coupling the solder ball to each of selected ones of the plurality of conductive pads; coupling at least one passive device to the first surface; coupling the interposer to a substrate with the solder balls after the testing if the plurality of semiconductor dice pass the testing; and coupling at least one other semiconductor device to the substrate.

Gedney discloses populating the second surface with a plurality of conductive pads (32); coupling a solder ball (44) to each of selected ones of the plurality of conductive pads (32); coupling the interposer (24) to a substrate (38) with the solder balls (44); and coupling at least one other semiconductor device (Fig. 4 shows a third semiconductor device (20 and 24) is mounted on 38) to the substrate (38) thereby forming a multi-chip subassembly and mounting this subassembly to printed circuit cards (col. 1, lines 7-8) without any defective components.

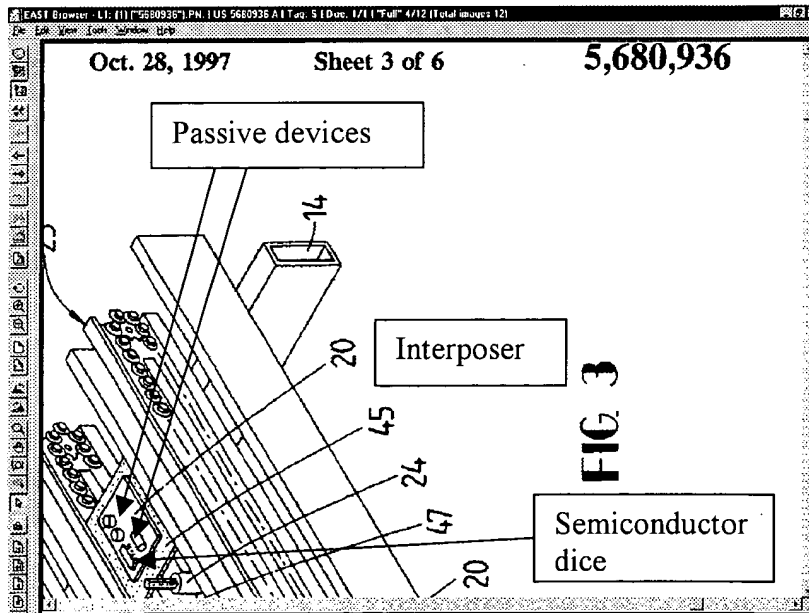
Beers discloses coupling at least one passive device (see annotated Fig. 3 below) thereby regulating voltage and current to the electronic dice.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Seidel by populating the second surface with a plurality of conductive pads;

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coupling the solder ball to each of selected ones of the plurality of conductive pads; coupling the interposer to a substrate with the solder balls after the testing if the plurality of semiconductor dice pass the testing; and coupling at least one other semiconductor device to the substrate, as taught by Gedney, for the purpose of forming a multi-chip subassembly and mounting this subassembly to printed circuit cards without any defective components.

Further, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Seidel by coupling at least one passive device to the first surface of the interposer, as taught by Beers, for the purpose of regulating voltage and current to the electronic chip.



Re claim 21: Seidel teaches the invention as described with respect to claim 19 above.

Seidel fails to disclose providing the interposer having organic material.

Gedney discloses providing the interposer (24) having organic material (col. 7, lines 15-16) thereby providing low thermal coefficient of expansion.

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It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Seidel by providing the interposer having organic material, as taught by Gedney, for the purpose of providing low thermal coefficient of expansion.

Re claim 23: Seidel teaches the invention as described with respect to claim 19 above. Seidel discloses scrapping the semiconductor dice coupled to the interposer without any further work if the plurality of semiconductor dice does not pass the testing (col. 1, lines 20-34).

Re claim 26: Seidel teaches the invention as described with respect to claim 19 above.

Seidel fails to disclose creating a plurality of contacts on the substrate; and electrically connecting the selected ones of the plurality of conductive pads to the plurality of contacts.

Gedney discloses creating a plurality of contacts (42) on the substrate (38); and electrically connecting the selected ones of the plurality of conductive pads to the plurality of contacts (Fig. 5 shows conductive pads 32 are electrically connected to the contacts 42 via solder balls 44) thereby allowing signal to travel from one part of the component to another and providing power and ground to the device.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Seidel by creating a plurality of contacts on the substrate; and electrically connecting the selected ones of the plurality of conductive pads to the plurality of contacts, as taught by Gedney, for the purpose of allowing signal to travel from one part of the component to another and providing power and ground to the device.

Response to Arguments

5. Applicant's arguments with respect to claims 19, 21, 23 and 26 have been considered but are moot in view of the new ground(s) of rejection.


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Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rick K. Chang whose telephone number is (703) 308-4784. The examiner can normally be reached on 5:30 AM to 1:30 PM.



PETER VO
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3700

RC
October 23, 2001

Attachment for PTO-948 (Rev. 03/01, or earlier)
6/18/01

The below text replaces the pre-printed text under the heading, "Information on How to Effect Drawing Changes," on the back of the PTO-948 (Rev. 03/01, or earlier) form.

INFORMATION ON HOW TO EFFECT DRAWING CHANGES

1. Correction of Informalities -- 37 CFR 1.85

New corrected drawings must be filed with the changes incorporated therein. Identifying indicia, if provided, should include the title of the invention, inventor's name, and application number, or docket number (if any) if an application number has not been assigned to the application. If this information is provided, it must be placed on the front of each sheet and centered within the top margin. If corrected drawings are required in a Notice of Allowability (PTOL-37), the new drawings **MUST** be filed within the **THREE MONTH** shortened statutory period set for reply in the Notice of Allowability. Extensions of time may **NOT** be obtained under the provisions of 37 CFR 1.136(a) or (b) for filing the corrected drawings after the mailing of a Notice of Allowability. The drawings should be filed as a separate paper with a transmittal letter addressed to the Official Draftsperson.

2. Corrections other than Informalities Noted by Draftsperson on form PTO-948.

All changes to the drawings, other than informalities noted by the Draftsperson, **MUST** be made in the same manner as above except that, normally, a highlighted (preferably red ink) sketch of the changes to be incorporated into the new drawings **MUST** be approved by the examiner before the application will be allowed. No changes will be permitted to be made other than correction of informalities, unless the examiner has approved the proposed changes.

Timing of Corrections

Applicant is required to submit the drawing corrections within the time period set in the attached Office communication. See 37 CFR 1.85(a)

Failure to take corrective action within the set period will result in **ABANDONMENT** of the application.